# MTC Bicycle and Pedestrian Safety TAP

## Final Program Summary


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FEHR & PEERS
TRANSPORTATION CONSULTANTS

## INTRODUCTION

The Metropolitan Transportation Commission (MTC) initiated the Regional Pedestrian and Bicyclist Safety Technical Assistance Program (Safety TAP) project in the fall of 2002 to assist local agencies in improving bicycle and pedestrian safety. The Safety TAP's goal was to create a "culture of safety" by institutionalizing bicycle and pedestrian considerations into city policies and practices.

Four cities were identified and invited to participate as pilot agencies: Fremont, Napa, Santa Rosa, and Sunnyvale. The Safety TAP program began with the formation of a Regional Safety TAP working group for each city. Working groups consisted of city staff for various departments including planning, public works, police, and parks. Working group meetings were held to review program documents and provide feedback.

City staff was involved throughout the duration of the Safety TAP. Staff attended working group meetings, assisted in the reviews of high-collision locations, and provided comments and feedback on documents prepared as part of the program.

The products of the Safety TAP analysis included:

- Bicycle and pedestrian collision analysis reports for each of the four pilot cities
- A summary of existing programs, policies, and procedures relating to bicycle and pedestrian safety
- A detailed set of recommended Safety Initiatives, ranked by priority
- An evaluation of several high-incidence bicycle and pedestrian collision locations in each jurisdiction
- A "toolbox" of bicycle and pedestrian countermeasures encompassing education, engineering, and enforcement strategies


*The Safety TAP toolbox includes engineering, education, and enforcement countermeasures that could improve bicycle and pedestrian safety*

## TRENDS AND PROGRAMS SUMMARY

Bicycle and pedestrian collision trends for each pilot city were evaluated over a three-year period, typically from 1999-2002. The analysis examined four types of data for both bicycle and pedestrian collisions.

- Collisions: This information includes an analysis of the major causes of each collision, the locations of collisions, and the seasonal variation of collisions.
- Conditions: Environmental conditions at or near the collision site at the time of each crash were examined. This included an analysis of weather conditions, lighting conditions, and types of traffic control devices present.
- Demographics: This included a determination, by gender and age, of collision rates for bicyclists and pedestrians.

- Locations: This portion of the analysis includes a citywide map of bicycle and pedestrian collisions and other spatial analysis of different collision types.

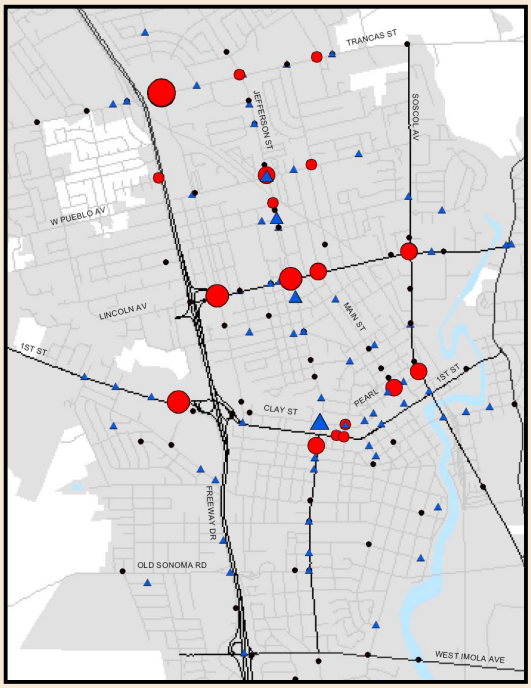
Collision statistics varied substantially among jurisdictions, but several prevalent trends emerged in the four pilot cities. These included the following:

- In three out of the four jurisdictions, a majority of bicycle collisions are determined to be the fault of the bicyclist. Most of these collisions involved wrong-way-riding, particularly in the cities of Napa and Santa Rosa.

- Pedestrians were found to be at fault in substantially fewer collisions than bicyclists. In all jurisdictions, motorists were more often at fault – in fact, 75 percent of pedestrian collisions in Napa were the fault of the motorist. The most common automobile violation in pedestrian collisions was a vehicle's violation of the pedestrian's right of way.

- The proportion of intersection and non-intersection collisions varied across jurisdictions but was roughly equal for bicycle and pedestrian collisions. Generally, intersection collisions comprised between 50 and 75 percent of all collisions. In Napa, nearly three quarters of bicycle and pedestrian collisions occurred at or near an intersection, though in Sunnyvale equal proportions of collisions occurred at intersection and non-intersection locations.

- Males aged 11-19 are most likely to be injured in bicycle collisions. While this is consistent with national trends, three jurisdictions had a disproportionately high share of bicycle collisions involving males aged 11-19. In pedestrian collisions, males under 20 were the most likely to be injured. Of females, those aged 11-19 were typically most likely to be injured.




*The Safety TAP program included a spatial analysis of bicycle ana pedestrian collision locations in each pilot jurisdiction. This analysis facilitated the identification of several high-incidence locations where physical safety improvements could be focused.*

To evaluate existing bicycle and pedestrian safety efforts, surveys were taken of each of the four pilot city's programs, policies, and procedures that relate to bicycle and pedestrian safety. Some notable engineering, education, and enforcement programs included:

*Educational Information and Programs*

- The City of Napa has recently undertaken an education campaign entitled "Street Smarts." Street Smarts, a program developed by the City of San Jose, is designed as both a media and community relations campaign, using education to raise awareness of driver behavior factors that contribute to traffic collisions. Current behaviors being addressed by the campaign are: red-light running, speeding, stop sign violations, school zone violations and crosswalk violations.

- The City of Fremont publishes (online and in print) bicycle and pedestrian safety tips. These tips outline behaviors that will increase safety for bicyclists and describe not only applicable traffic laws but also insights unique to cycling (e.g. avoiding opening car doors). Pedestrian safety tips inform readers about how the technology of traffic signals work and how observing those signals can increase pedestrian safety.

- The City of Santa Rosa organizes a Bicycle and Walk to Work Week event each year. In 2003, the City included bi-lingual outreach in Spanish and distribution of 100 helmets to children at a local apartment complex. In 2004, activities included bicycling skills classes, a bike-in movie, and a shop-by-bike event.

- Santa Rosa's "Take a Free Ride" program offers incentives to get employees to use alternative modes for their commute to work. The program offers free brochures and posters, a free consultation to determine how to maximize rideshare programs at their workplace, and free bicycle parking racks. Incentives for employees include discounted transit tickets, free movie tickets, and participation in the Guaranteed Ride Home program. The City currently has over 1,800 participants in the "Take a Free Ride" program.

*Enforcement Programs*

- The City of Sunnyvale partners with adjacent jurisdictions to share police force staff allowing each jurisdiction to have a much higher police presence on a rotating basis. This is generally used a couple times a year for drunk diving and safe school drop-off intensive enforcement periods. Sunnyvale has successfully used the program at the start of school years to establish safe drop-off activities.

- The City of Fremont has a Junior Safety Patrol where participants take a post at school crossings and work to ensure the safety of fellow students. The Fremont Police Department provides training, safety lectures, and ongoing enforcement in areas surrounding the schools. School staff and parent volunteers provide direct supervision and support for the program. Unfortunately, this program has been substantially reduced in the last year due to budget constraints, but the program is continuing through a partnership between schools and PTAs.

- The City of Napa has a Junior Traffic Patrol that originated in 1955 as a cooperative effort between the Napa Police Department and schools. Every year, students volunteer to be members of the Napa Junior Traffic Patrol team for their respective school. Members receive training from a member of the Napa Police Department and accept the responsibility of controlling the pedestrian and vehicle traffic in and around their school.

- The Sunnyvale Police Department supervises a juvenile Traffic School Program whereby children receiving citations for bicycle infractions (such as wrong-way riding and failing to yield right-of-way) have an option to attend a class on safe riding. This is a unique program targets one of the most important groups of cyclists in terms of collision reduction.

*Engineering Policies and Programs*

- Sunnyvale currently has a comprehensive set of documents addressing bicycle and pedestrian planning. In addition the City's *Bicycle Master Plan*, documents include a *Bicycle Opportunities Study*, *Bicycle Capital Improvement Program*, and *Downtown Urban Design Guidelines*, which address design and implementation of non-motorized facilities. Similarly, Santa Rosa has prepared two reports on pedestrian needs in the City. The first report identifies pedestrian crossing and walking needs on major collector and arterial streets, listing locations where

signal modifications, pedestrian flashers, and striped crosswalks are recommended. The second report focuses on school issues, including sidewalk and pathway needs, traffic signal needs, and street reconstruction.

- *Wrong-Way Riding Signs* – Bicycle facility signs in the City of Sunnyvale are double-sided. The front of the sign displays the typical bicycle lane symbol, while the back contains a "Bikes Wrong Way" message. The use of this signage may contribute to the City's low number of bicycle collisions resulting from wrong-way riding.

Based on the collision analyses and existing programs in each pilot jurisdiction, a set of Safety Initiative recommendations was developed to best accomplish the goal of improving bicycle and pedestrian safety in each jurisdiction for both the short and long-term. Recommendations included institutionalization and integration initiatives as well as modification of, intervention in, or expansion of existing programs. Recommendations were categorized according to their expected benefit, timeframe to implement, and level of effort to implement. Initiatives with a high expected benefit and a timeframe of one year or less were called out as having the highest priority.

## Safety Initiatives Summary for the City of Napa

| Safety Initiative | Lead Department | Expected Benefit | Level of Effort | Timeframe (Short, Medium, or Long-Term) |
|---|---|---|---|---|
| *INTEGRATION AND INSTITUTIONALIZATION* | | | | |
| **I-1. Develop Bicycle and Pedestrian Master Plans** | **Public Works (DPW)** | **High** | **Medium** | **Short** |
| I-2. Formalize Bicyclist and Pedestrian Safety Practices | DPW | High | High | Medium |
| **I-3. Annual Safety List of Bicycle / Pedestrian Collision Trends** | **Police Department (NPD)** | **High** | **Medium** | **Short** |
| I-4. Designate Bicycle and Pedestrian Coordinator | To be determined | High | Low | Medium |
| I-5. Develop Safe Routes to School Program | To be determined | High | Medium | Medium |
| **I-6. Bicycle and Trails Sub-Committee Work Program** | **DPW** | **High** | **Low** | **Short** |
| I-7. Establish a Crosswalk Review | DPW | Medium | Medium | Short |
| I-8. Discourage Wrong-Way Bicycle Riding | DPW | Medium | Low | Short |
| *MODIFICATION* | | | | |
| **M-1. Implementation of High-Collision Location Countermeasures** | **DPW** | **High** | **Medium** | **Short** |
| M-2. Update City's Plan Review Checklist | DPW/Community Development Dept. (CDD) | Low | Low | Short |
| M-3. Develop Bike and Ped Design Guidelines | DPW | High | High | Medium |
| M-4. Bike and Ped Impact Statements | CDD | Medium | Low | Short |
| M-5. Standardized Collection of Bike and Ped Counts | DPW | Low | Low | Long |
| M-6. Revise City LOS Guidelines to Include Bike/Ped Safety | DPW | Medium | Medium | Long |
| *INTERVENTION* | | | | |
| **V-1. Develop Traffic Calming Program** | **DPW** | **High** | **Medium** | **Short** |
| V-2. Develop Bike/Ped Educational Materials | CDD | Medium | Medium | Medium |
| V-3. Implement Crosswalk Enforcement Detail | NPD | Medium | Medium | Medium |
| *EXPANSION* | | | | |
| E-1. Expand City's Crosswalk Policy | DPW | Low | Medium | Medium |
| E-2. Expand Hazard Reporting Mechanisms | DPW | Low | Medium | Medium |
| *Note: High priority initiatives are defined as those with a high expected benefit and a short timeframe* | | | | |

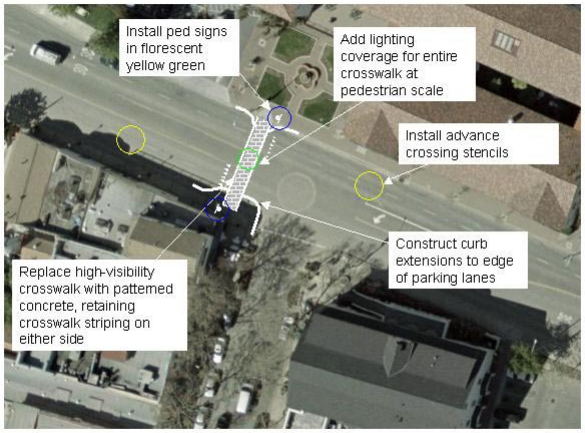
As part of the collision analysis, several high-incidence locations in each jurisdiction were identified by city staff for field inspections. The analysis consisted of an existing conditions evaluation, problem identification, and the development of low and higher cost potential improvements for each site, including conceptual drawings.

Examples of the improvements included the high-visibility crosswalks, advance limit lines, flashing beacons, narrowed travel lanes, bicycle lanes, bicycle detection at signalized intersections, and the addition of pedestrian refuge islands.

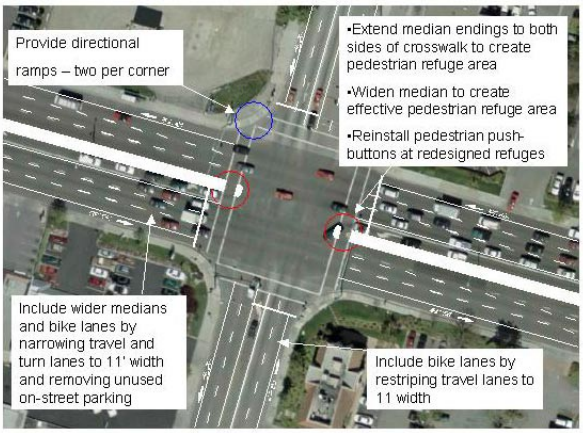
*Next Steps for Participating Agencies*

The safety initiatives provided each city with a valuable set of recommendations to continue improving bicycle and pedestrian safety. The Safety TAP documents could catalyze pilot jurisdictions to coordinate their existing bicycle and pedestrian safety programs, integrate new high-priority measures, and consider appropriate longer terms recommendations to begin working towards. Benchmarks were developed for each city whereby success could be measured. Typical benchmarks included reduction of certain types of collisions, establishment of new programs by the end of 2005, and implementing intersection improvements at the top bicycle and pedestrian collision locations.

Benchmarks included general and specific goals. General goals, such at those listed below for Fremont, are geared towards developing high-priority Safety Initiatives. Specific goals are focused on reducing types of collisions most prevalent in each jurisdiction. For example, specific goals for the City of Sunnyvale included reductions in driver failure-to-yield collisions for bicyclists and reductions in pedestrian collision rates for males under 20 and males and females over 70.




**Evelyn and Murphy – Proposed Higher Cost Improvements**




**El Camino Real and Mary – Proposed Higher-Cost Improvements**

*Field inspections were performed for several high-incidence bicycle and pedestrian collision locations in each City. Conceptual designs, such as the two above examples from Sunnyvale, were developea to improve safety and included low-cost and higher-cost improvements.*

## LESSONS LEARNED

The Bicycle and Pedestrian Safety TAP project was a pilot effort by MTC. At the time the project was initiated, it was considered as a possible new program to be offered to local jurisdictions, similar to the Traffic Engineering Technical Assistance Program (TETAP). During the course of the study, MTC has refined its mission to focus on regional transportation issues, rather than local assistance programs. As a result, the TETAP program will be eliminated within the next several years and initiation of a new Bicycle and Pedestrian Safety TAP was deemed to be inappropriate. Nonetheless, the Safety TAP effort has proven effective in helping jurisdictions to coordinate internal programs and decisions related to pedestrians and bicycles and armed those jurisdictions with the latest research and programs for improving safety. The true test of success will be in whether jurisdictions implement recommendations developed through the Safety TAP.

As with most pilot efforts, MTC and the consultant team learned a number of lessons through the course of the study. Several notable lessons are identified below.

## General Program Benchmarks for Fremont

- Bicyclist and Pedestrian Safety Report Benchmark: Develop an initial safety report.
- Safe Routes to Schools Program Benchmark: Identify three pilot schools, and implement a pilot project at each by the end of 2005.
- BPTAC Work Plan Benchmark: Develop a work plan and identify two or three priority initiatives by June 2005.
- Analysis of High Collision Locations Benchmark: Conduct analysis of high collision locations and implement improvements at least two locations by the end of 2005.
- Reinstate Traffic Calming Program Benchmark: Reinstate the program by the end of 2005 by exploring new funding opportunities to restore funding to preexisting levels.

- *Getting Schools to table is a challenge*

Getting schools to the table as part of the Safety TAP proved difficult. Reasons included the existence of multiple school districts in some jurisdictions and the lack of open and regular communication between city staff and school districts. In several jurisdictions there was a reluctance to coordinate due to past failures at similar attempts. One major reason cited for past failures was the inability to get decisions-makers, people with enough authority to affect change, to participate in the process. Better coordination and efforts to establish contacts at all school districts may have permitted better jurisdiction-specific recommendations with respect to school-age bicyclists and pedestrians. Most jurisdictions had a high proportion of school-age collisions, suggesting a well-integrated approach to bicycle and pedestrian safety may see substantial benefits.

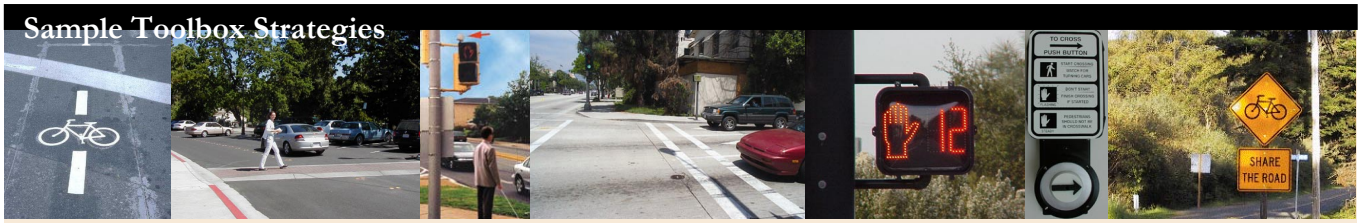
- *The Safety TAP was not necessarily a top-down effort, though staff participation was important on every level.*

While the Safety TAP was initially envisioned as a program to be initiated through City Managers and/or City Council members, communication directly with city staff was also critical to the success of the program. Staff oftentimes had a detailed knowledge of existing safety practices and high incidence locations. Staff tended to be more responsive to inquiries about existing city programs and provided valuable feedback and comments for the draft Safety Initiatives reports. The most appropriate model to follow may be to begin and end the process with buy-off from city management and City Council members, but allow for a high level of staff involvement during the process.

- *General Collision Statistics: Many school-age collisions, high wrong way riding rates*

Males under 20 were involved in a disproportionate share of bicycle collisions, compared to national trends. The rate of wrong way bicycle riding collisions was also higher than national bicycle collision studies have shown. Pedestrian collisions, while not as distinct from national rates as bicycle collisions, also disproportionately impacted school-age

## Sample Toolbox Strategies

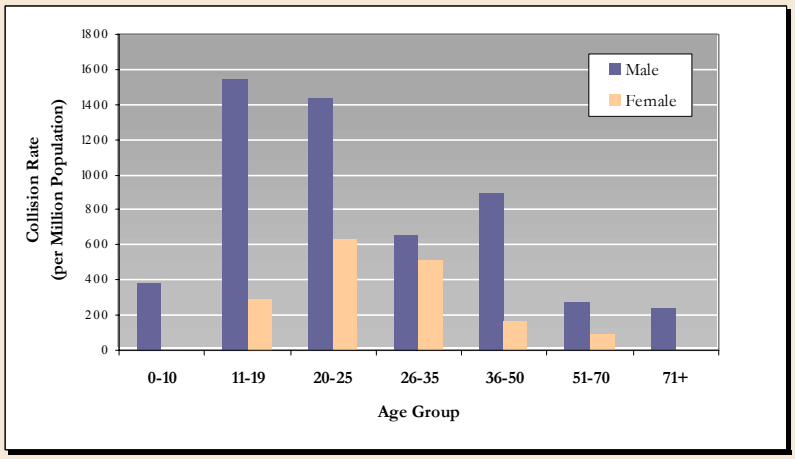



*Bicycle Detection Stencil* | *High-visibility Raised Crosswalk* | *Actuated Pedestrian Detection* | *Advance Limit Lines* | *Pedestrian Countdown Timers* | *Actuated Pedestrian Pushbuttons* | *"Share the Road" Signs*

children. The emergence of these trends substantiates the need for improved Safe Routes to School programs in the Bay Area. Many of these programs focus on reviewing physical conditions around schools, but at least in the four pilot jurisdictions it was apparent that improved coordination between the cities and schools should be a first priority.

- *Bicycle and pedestrian staffing levels could be improved*

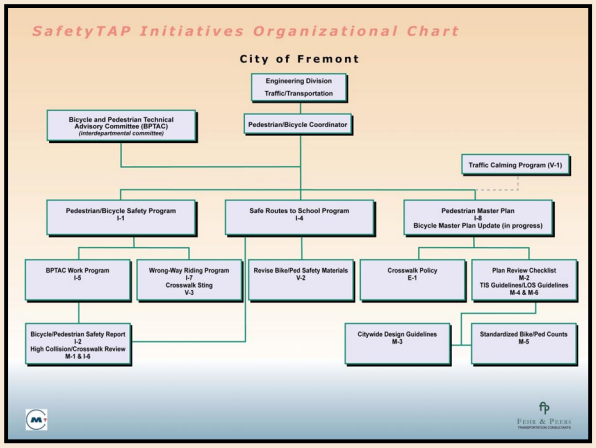
With the exception of Sunnyvale, the cities did not have as many staff dealing with bicycle and pedestrian safety as other similarly sized Bay Area jurisdictions. This may be indicative of city priorities, financial constraints, reluctance of city staff to assume new responsibilities, or a combination of these. Most Safety Initiative recommendations hinged upon a bicycle and pedestrian coordinator to oversee city programs, but the ability and willingness of cities to increase staffing dedicated to bicycle and pedestrian planning is an important prerequisite.




*The Safety TAP collision analysis summarized bicycle and pedestrian collisions by age and gender. This chart for bicycle collisions in Napa is typical of other Cities – males tended to have greater collision rates than females, and rates were highest for those aged 11-19. Napa was unique in that the highest female bicycle collision rate was for females aged 20-25.*

- *The Toolbox had a limited utility as part of the SafetyTAP program*

The Toolbox and Safety Initiatives did not integrate as well as anticipated and perhaps could have even been developed as separate projects. Both are useful for improving bicycle and pedestrian safety, but the Toolbox was not a key stepping-stone to the development of the Safety Initiatives as had originally been anticipated. To better integrate the two, the toolbox may have been better completed subsequent to the collision analysis in an effort to develop effective, appropriate countermeasures.




*Organizational charts depicting how Safety Initiatives could be integrated were developed. The City Bicycle/Pedestrian coordinator would play a critical role in overseeing the various safety programs.*

The Toolbox is nonetheless valuable and should be included in MTC's *Regional Pedestrian Resource Guide*. Promotion and distribution of the availability of the tool on MTC's web page will be an important component of this.

- *Given MTC's refined mission, the Safety TAP should not be continued, but should be made a component of TETAP.*

Pedestrian/Bike Safety TAP-type projects should be permitted as TETAP-eligible projects to encourage creating a "culture" of bicycle and pedestrian safety among Bay Area cities.

## RECOMMENDATIONS

Based on the above lessons learned, several recommendations are appropriate for future bicycle and pedestrian safety efforts.

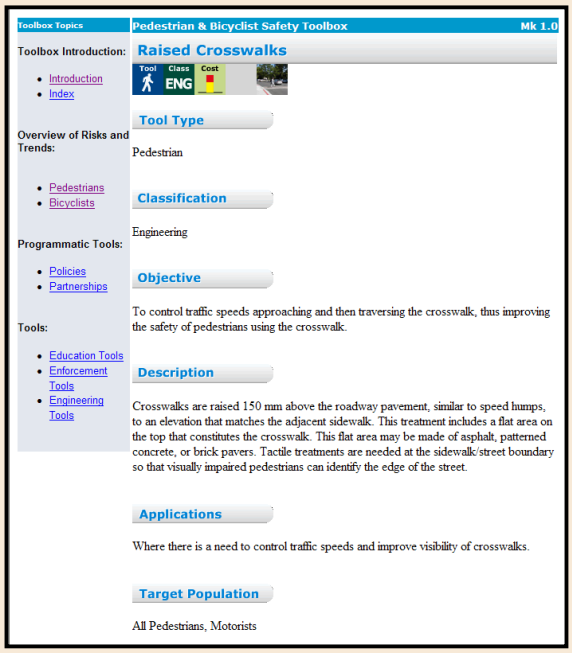
I*mprove school coordination to facilitate safety efforts for children and youth.* Safe Routes to School programs were listed as high-priority initiatives for all agencies, making school coordination important. Formal communication pathways should be established to realize the full potential of implementing a Safe Routes to School program. School staff liaisons should be designated so City staff will have appropriate contacts at each school.

*Improve staff participation in subsequent activities of a similar nature.* While buy-in from city management was important at the outset, staff participation in the program was necessary and important for establishing communication pathways throughout the project.

*Improve bicycle and pedestrian staffing levels.* While the existence of a full-time employee dedicated to bicycle and pedestrian safety efforts may not be justified for all jurisdictions, several other Bay Area Cities with less population do have one or more staff devoted to bicycle and pedestrian activities.

*Incorporate the Toolbox into the Regional Pedestrian Resource Guide.* The Toolbox provides an excellent overview of engineering, education, and enforcement measures that could be considered and implemented where appropriate and could be a valuable resource for Bay Area Cities. The Toolbox should be maintained and periodically updated to ensure it remains a comprehensive resource for the most effective and innovative bicycle and pedestrian safety measures.

It is also recommended Ped/Bike Safety TAP-type projects be permitted, and perhaps promoted, as TETAP-eligible projects to encourage integrating bicycle and pedestrian safety efforts with other transportation engineering programs in the Bay Area.




*A web-based Safety TAP Toolbox could be a useful and effective regional resource.*